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February 17, 1993

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DIVISION OF
OIL GAS & MINING

Glen Eurick
Environmental Affairs Coordinator
Barrick Mercur Mine
P.O. Box 838
Tooele, Utah 84074

RE: Barrick Mercur Dump Leach Closure
Plans: Response to Submittal and
Correspondences Dated; October 29,
1992; October 9, 1992; October 2, 1992;
July 10, 1992; January 27, 1993; October
28, 1991

Dear Mr. Eurick:

The Division of Water Quality is in receipt of the closure plans submitted by Barrick for Dump Leach Areas 1, 2 & 3. Each of these facilities is unique when viewed from the perspective of the Water Quality Act and the Ground Water Quality rules. However, given the similarity in design, function and potential risk to the environment, it would be prudent to derive common requirements for these facilities based on a common set of environmental objectives and safeguards. We feel we could propose a single set of numeric water quality and design criteria for closure of the facility such that the facilities would not be subject to further regulation by this agency. Indeed the proposals made to date by Barrick are essentially identical for each of the three leach dumps. However, because the facilities have been constructed over a period of differing regulatory oversight, we have addressed the issues from the standpoint of minimum requirements. **"Clean closure" neutralization criteria for the purposes of this discussion is defined as 0.2 mg/L weak acid dissociable cyanide and the standards of Table I of the Ground Water Quality Protection Rules, R317-6. In the event that the rinsate or pore space water cannot meet these concentrations then alternative concentration levels may be considered. Two approaches are available for determining appropriate alternate concentration limits. One approach would be to determine these levels based on levels demonstrated achievable by Column Neutralization testing by an independent party. A second approach would be for Barrick to demonstrate that levels above the "clean closure" criteria will not have a detrimental impact on ground water resources based upon a contaminant transport methodology.** It may be beneficial to meet and discuss this approach after your consideration of this letter.

DUMP 1

Area 1 is an existing facility under the Ground Water Quality rules which exempts it from the requirement to apply for a permit unless required by the Executive Secretary. Since at this time a permit has not been required, Barrick may choose to close this facility under the conditions of the 1985 Construction Permit. The neutralization criteria of this permit for total cyanide to be less than 5 mg/L has been achieved leaving the placement of a suitable cap as the only remaining criteria to be satisfied. Thus, the plans Barrick submitted for closure of Area 1 through your October 29, 1992 correspondence have been referred to the Design Evaluation Section to coordinate Division interests in this matter. C.C. Patel has been assigned to review this closure proposal. Mr. Patel's review of this matter and his comments thereof should be received by Barrick within two weeks of this letter.

The closure plan neutralization criteria proposed by Barrick under the 1985 Construction Permit is not considered sufficient to abandon the facility as a "clean closure" in which the facility would not continue to be considered under the Ground Water rules as an "existing facility". Therefore, the possibility will remain that at some future time the Executive Secretary may call for a Ground Water Permit for Area 1, should ground water quality become an issue and concerns are raised. To reduce the potential environmental risk and thus Barrick's potential liabilities, Barrick should consider further neutralization prior to closure of this facility. Offsetting this risk is the fact that the placement of a well constructed clay cap and suitable runoff controls could minimize the infiltration through the tailings of Area 1 and thus reduce the concern of ground water discharge from this facility. We are aware that Barrick intends to use Area 1 as a storage and staging area for mine work to commence in the summer of 1993. Thus Barrick should weigh these considerations and choose the option that you believe best meets your needs.

DUMP 2

We are in receipt of your correspondence dated October 9, 1992 and October 2, 1992 concerning neutralization and closure aspects of Dump Leach Area 2. We agree with your suggestion that a meeting is in order to discuss final neutralization and closure issues for this facility. Because the neutralization procedures were discontinued for winter, now is the an appropriate time for resolving these matters.

Pursuant to the resolution of the Stipulation and Consent Order, Docket No. GW90-03(A), Barrick Submitted on March 31, 1992 Neutralization, Closure and Post Closure Monitoring Plans in response to the requirements of items 3, 4 and 5 of the order. In response to that submittal an evaluation was made of the Neutralization component of Barrick's submittal which was summarized in a letter from our office on June 15, 1992. Barrick responded in a July 10, 1992 letter and was then granted approval to use Tailing Impoundment Water in the initial phase of neutralization of Dump Leach No. 2. This approval was contingent upon satisfactory resolution

of all outstanding Neutralization Plan issues. Although this facility is also classified as an "existing facility", the Stipulation and Consent Order incorporated the more current philosophy on ground water and closure issues. Therefore, the following comments are provided in order to put these issues in perspective and satisfy specific compliance schedule requirements. Barrick is asked to consider these comments and respond within 60 days.

We are also in receipt of your letter of January 27, 1993 informing our Division of Barrick's intent to further utilize tailings impoundment water along with accumulated snow pack in order to achieve further neutralization at Dump 2. Although the further application of tailings impoundment water may be appropriate for now, referring to tailings impoundment water as "detoxified reclaim solution" is misleading. Although the cyanide destruction process reduces the concentration of the highly reactive cyanide prior to deposition of the tailings slurry in the tailings impoundment, it is not considered de minimus and the process does not address other parameters of potential concern including arsenic, mercury, selenium, thallium, nickel, fluoride, nitrates, sulfates and chlorides. This is important so as not to assume the water quality of the reclaim solution is construed to be the final neutralization criteria.

The use of the tailing impoundment water to achieve a preliminary reduction of cyanide values in the leach dumps prior to the application of a yet to be determined secondary treatment may still be appropriate. Barrick should determine the length of time for which the application of tailings impoundment water will have a beneficial neutralization effect or determine other appropriate criteria for determining when the application of tailings impoundment water should cease and secondary treatment commence. Column Testing of ore samples from the leach dumps might provide some insight into the possible effectiveness of further application of tailings impoundment water. Alternatively, Barrick might propose continued application of the tailings impoundment water until the out flow water chemistry approaches the water chemistry of the tailings impoundment water. The determination of an appropriate secondary treatment should also be made in the very near term. Barrick is aware of its options in this regard and should choose an option that is economical and practical as well as effective. The effectiveness and feasibility of the chosen secondary treatment should be demonstrated by Column Neutralization Testing in order to determine the appropriate detoxifying agents, contact time, volume and rate of application and to determine the expected chemical characteristics of the neutralized leachate. The expected characteristics of the leachate from the treated ore should be defined for not only cyanide but also for metallic species, nitrite, nitrate, fluoride, basic ions and total dissolved solids. Thus a proposal from Barrick in this regard could possibly be discussed at our next meeting.

Please be aware that the recovery of resource values during the neutralization process is appropriate only as long as the continuing effectiveness of the neutralization process can be demonstrated. Prolonged and unnecessary application of tailings impoundment water would be contrary to the intent of the Stipulation and Consent Order.

In the event that "clean closure" neutralization criteria are not achievable, the proposed cap consisting of 12 inches of clay, 3 feet of fill soil and 12 inches of top soil may be acceptable depending on the level of neutralization achieved. An appropriate intensity and duration of neutralization effort must be completed before consideration is given to acceptance of a neutralization effort that does not meet "clean closure" criteria. The length of the post-closure ground water monitoring period in turn will be determined based on the effectiveness of the neutralization and the level of protection provided by the cap design. The level of protection the cap will provide is directly related to the permeability to be achieved during cap construction. Barrick's proposal does not establish numeric criteria for liner permeability and fill soil compaction and thus we consider this to be an open issue. Establishing liner permeability specifications must be done before the closure and post closure aspects of this proposal can be finalized. At this time we would like to express some concern that the nominal 1% slope of the dump leach cap, may not be sufficient to provide adequate drainage and thus prevent pooling on and within the dump leach. A 2% slope is recommended.

DUMP 3

In accordance with the Compliance Schedule provisions of the Ground Water Quality Discharge Permit, No. UGW450001, a Conceptual Closure Plan for Dump Leach 3 was submitted by Barrick to the Division of Water Quality on October 28, 1991. According to the permit "this plan will form a conceptual basis for a final closure plan that will be prepared by Barrick at a date more imminent to closure." Since Barrick will likely operate Dump Leach 3 beyond the July 10, 1995 expiration date of the current permit, Final Neutralization and Closure Plan requirements will be a major focus of the next permit and thus the next permit application. In accordance with regulatory requirements, this application is due at least 180 days prior to the termination date of the current permit. According to the current permit this is the date by which Barrick shall also specify the Anticipated Date of Closure. Since regulations currently under consideration would establish neutralization, closure and post closure monitoring requirements we are willing to accept the current submittal as fulfilling the obligations of Part I.H.8 of Permit No. UGW450001 subject to the following understanding. The Closure requirements for the next term of the Ground Water Permit will be based on the most current regulatory standards. In the absence of standards that apply directly to metals leaching, requirements will be established based on the guidelines of the Ground Water Protection Regulations.

As a basis for determining appropriate neutralization and closure requirements many of the same concerns expressed for Dump Leach 2 are also relevant here. Specifically we will require that column neutralization testing be performed on ore samples from Dump Leach 3 in order to determine Best Available Technology for Neutralization at Dump 3. This testing should be concluded in advance and incorporated into Barrick's permit application due on January 10, 1995. This time table should allow Barrick to determine an effective and economical neutralization procedure prior to reissuance of this permit. Like Dump 2 the nominal 1% slope is also a concern here. The permeability of the clay portion of the cap design must be specified in

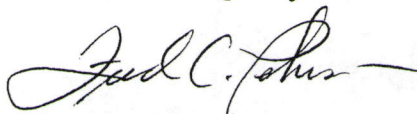
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advance in order to determine its adequacy. The length of the Post Closure ground water monitoring period will be based on the degree of neutralization achieved, the strengths and weaknesses of the proposed cap design and current regulatory guidelines.

The Division of Water Quality hopes that the long delays in responding to some of the submittals referenced herein have not inconvenienced or hindered Barrick's operations. Please be assured that it is our intent to be more timely in our future responses. Once you have had a chance to consider the above, please contact Dennis Frederick at 538-6146 to establish a meeting date. If you have any questions concerning this correspondence please contact Mr. Frederick at your convenience.

Sincerely,

Utah Water Quality Board


for Don A. Ostler, P.E.
Executive Secretary

DAO:DAF:gt

cc: Tooele County Health Department
Utah County Health Department
C.C. Patel, Design Evaluation Section
Div. Oil, Gas & Mining

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FILE:GROUND WATER PERMIT NO. UGW450001; STIPULATION AND CONSENT ORDER DOCKET NO. 90-03-A; DESIGN EVALUATION SECTION
BARRICK - DUMP 1